FIG. 1

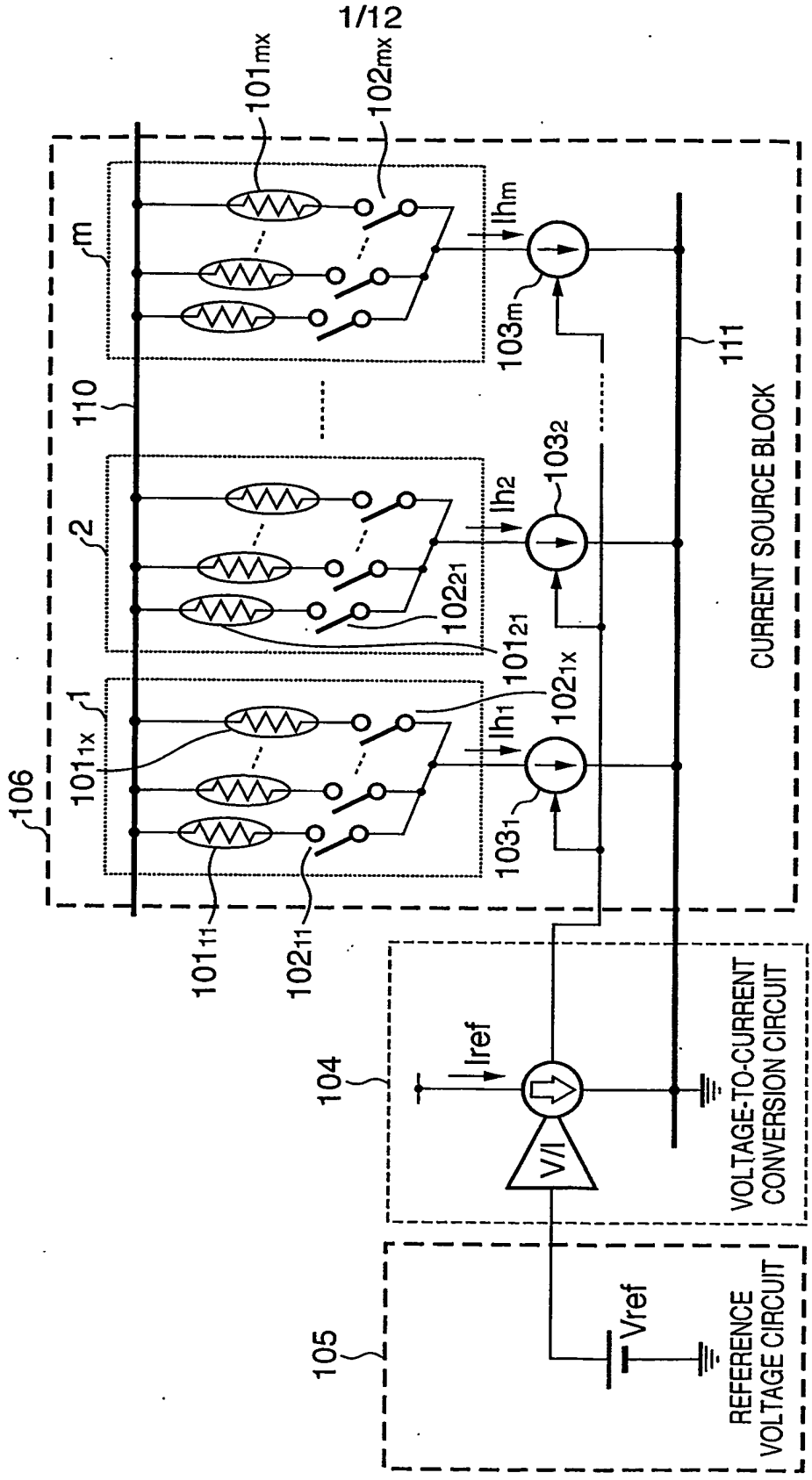

101mx
102mx
m
Ihm
103m
111
110
CURRENT SOURCE BLOCK
2
Ih2
1032
10221
10121
1
1011x
Ih1
102 1x
1031
106
10111
10211
104
Iref
V/I
VOLTAGE-TO-CURRENT CONVERSION CIRCUIT
105
Vref
REFERENCE VOLTAGE CIRCUIT

FIG. 2

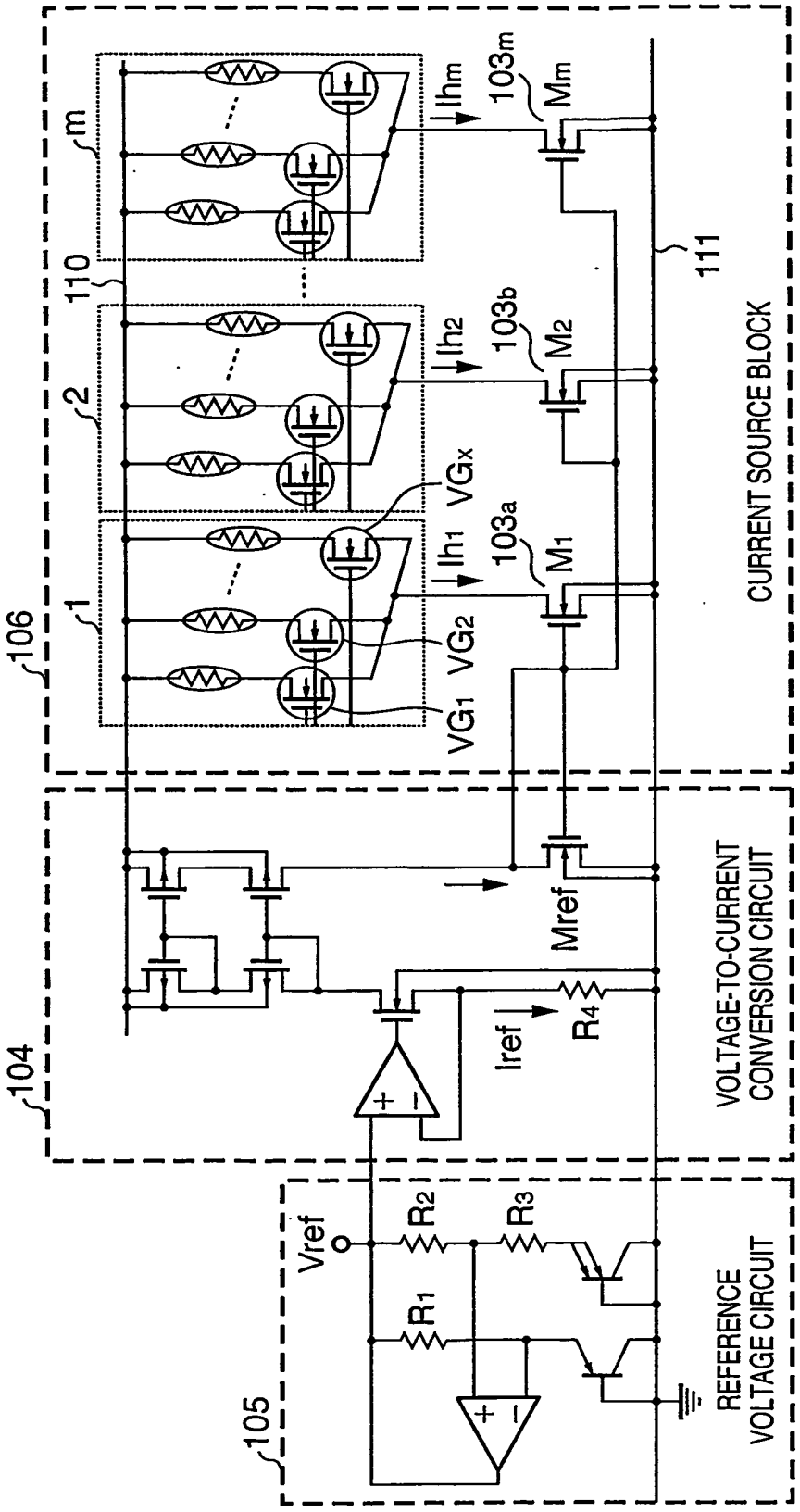

106
110
111
104
105
m
2
1
Ihm
Ih2
Ih1
103m
103b
103a
Mm
M2
M1
VGx
VG2
VG1
Mref
Iref
R4
R2
R3
R1
Vref
CURRENT SOURCE BLOCK
VOLTAGE-TO-CURRENT CONVERSION CIRCUIT
REFERENCE VOLTAGE CIRCUIT

FIG. 3A

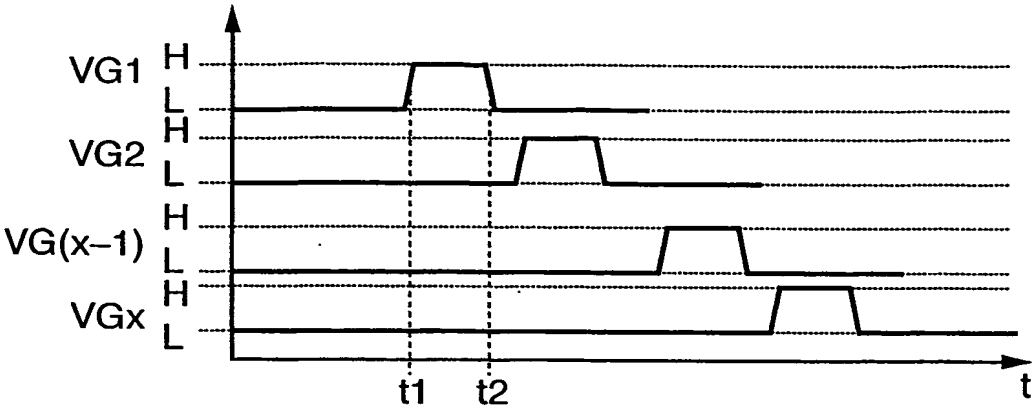


FIG. 3B

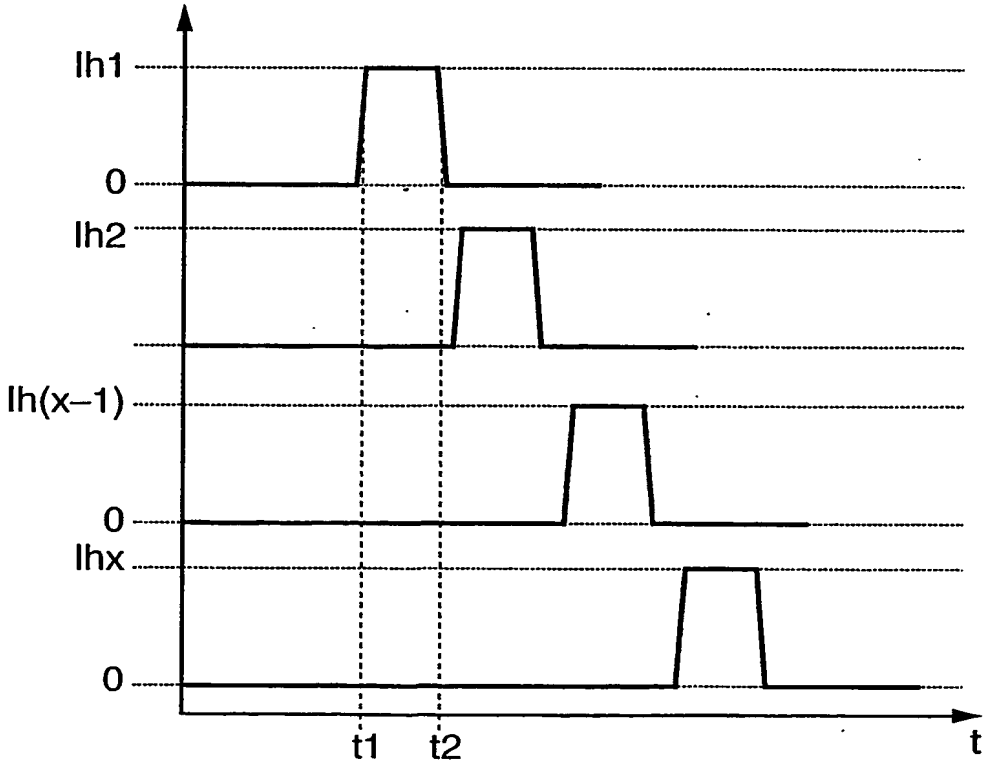


FIG. 4

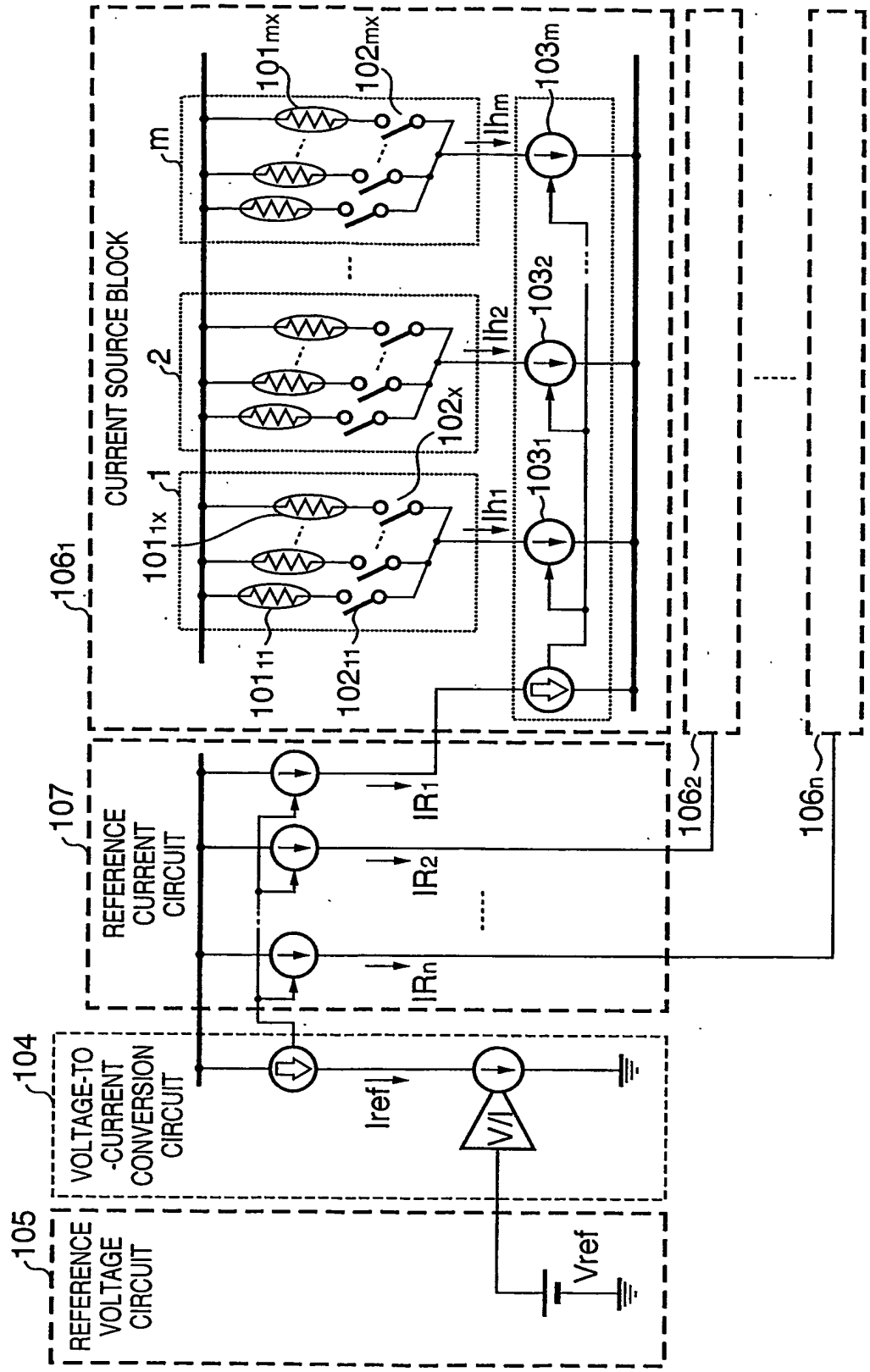

CURRENT SOURCE BLOCK
106_1
101_{1x}
101_{11}
101_{mx}
102_{11}
102_x
102_{mx}
103_1
103_2
103_m
Ih1
Ih2
Ihm
m
2
1
REFERENCE CURRENT CIRCUIT
107
IR1
IR2
IRn
106_2
106_n
VOLTAGE-TO-CURRENT CONVERSION CIRCUIT
104
Iref
V/I
REFERENCE VOLTAGE CIRCUIT
105
Vref

FIG. 5

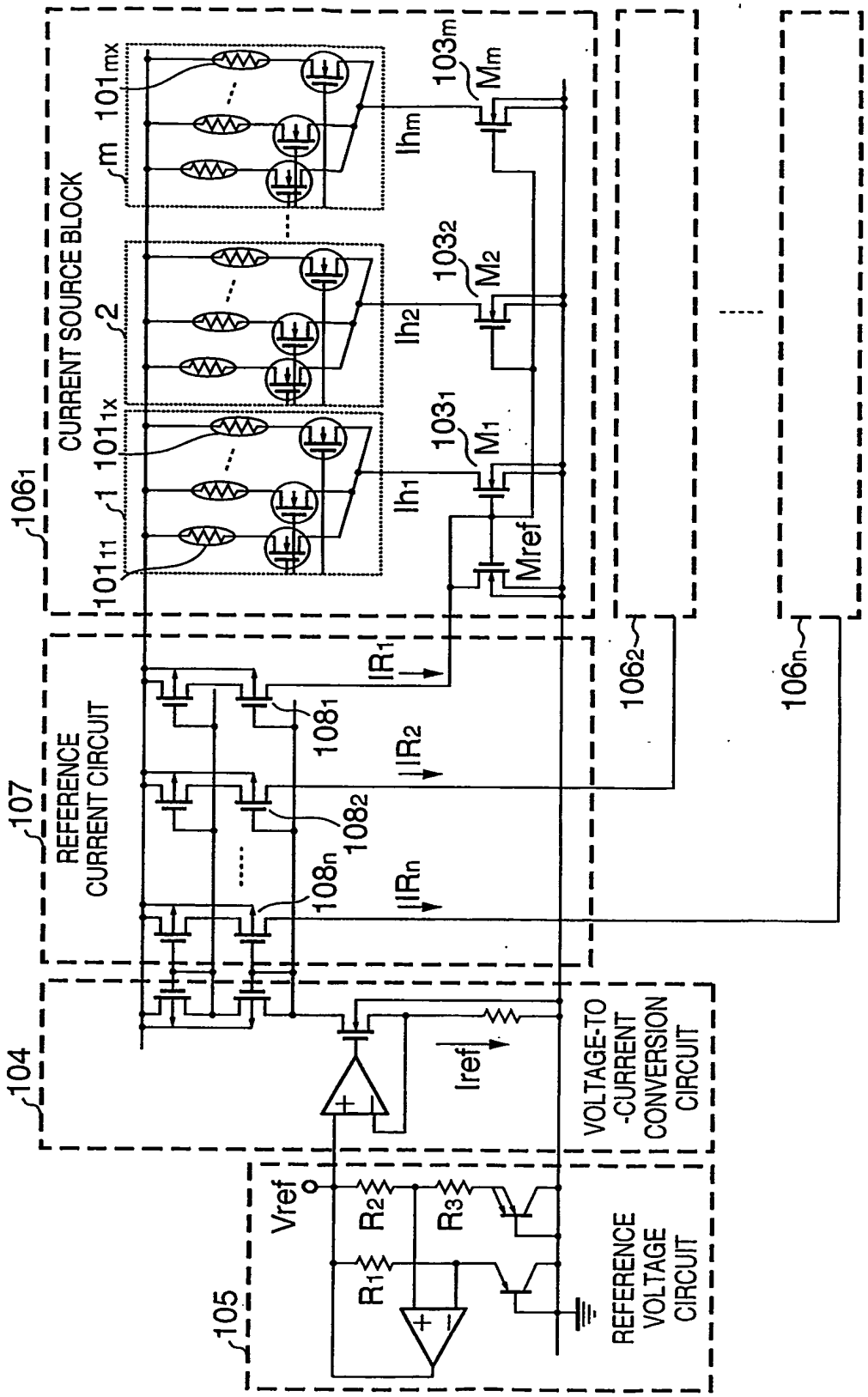

CURRENT SOURCE BLOCK
REFERENCE CURRENT CIRCUIT
VOLTAGE-TO-CURRENT CONVERSION CIRCUIT
REFERENCE VOLTAGE CIRCUIT
Vref
Iref
Mref
Mm
M2
M1
R1
R2
R3
IR1
IR2
IRn
Ihm
Ih2
Ih1
m
2
1
101mx
101₁₁
101₁x
103m
103₂
103₁
106₁
106₂
106n
107
108₁
108₂
108n
104
105

FIG. 6

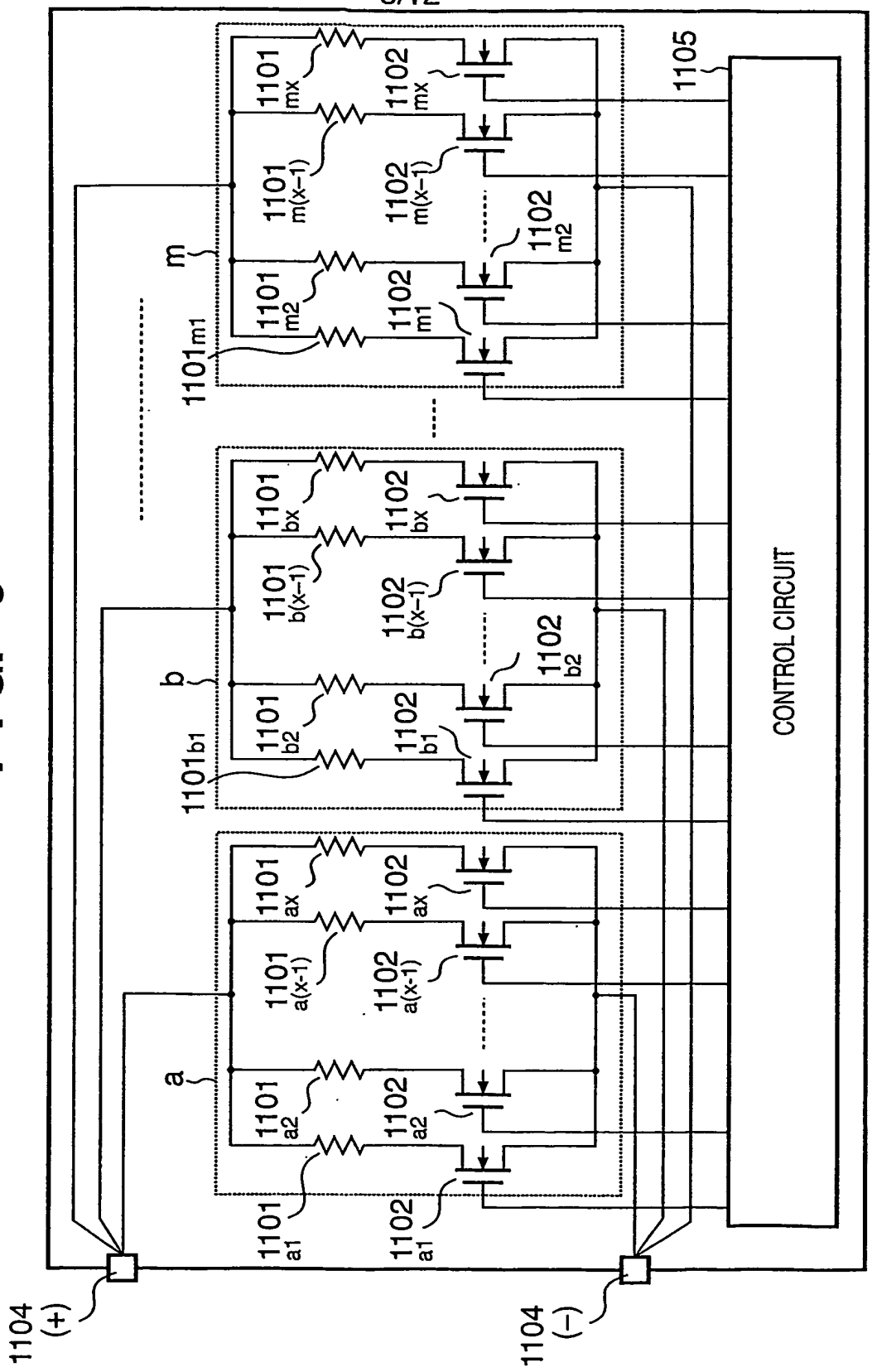

1105
CONTROL CIRCUIT
1104 (+)
1104 (−)
m
b
a
1101 mx
1102 mx
1101 m(x−1)
1102 m(x−1)
1102 m2
1101 m2
1102 m1
1101 m1
1101 bx
1102 bx
1101 b(x−1)
1102 b(x−1)
1102 b2
1101 b2
1102 b1
1101 b1
1101 ax
1102 ax
1101 a(x-1)
1102 a(x-1)
1101 a2
1102 a2
1101 a1
1102 a1

FIG. 7A

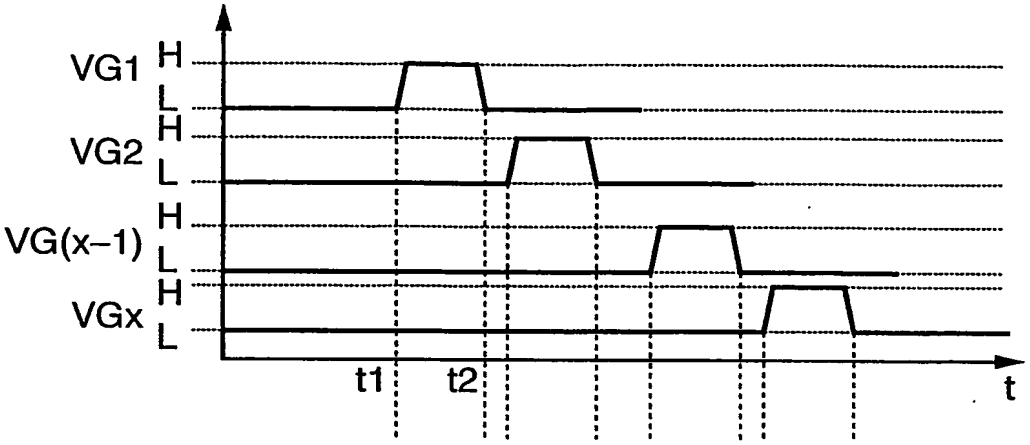


FIG. 7B

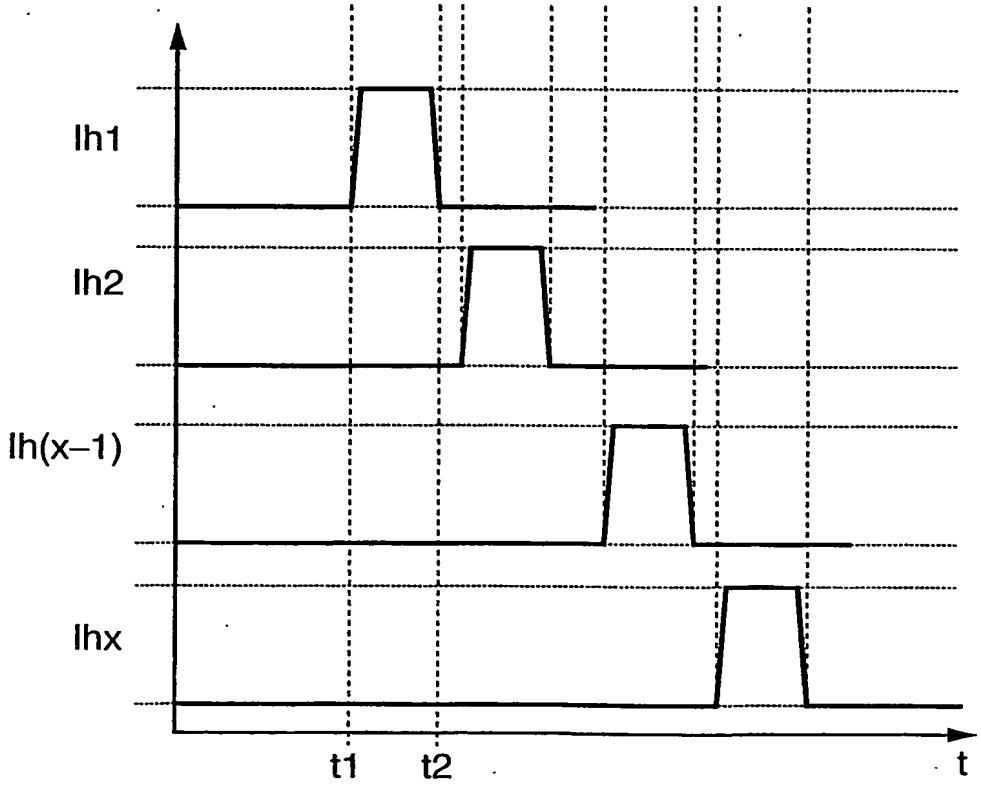


FIG. 8

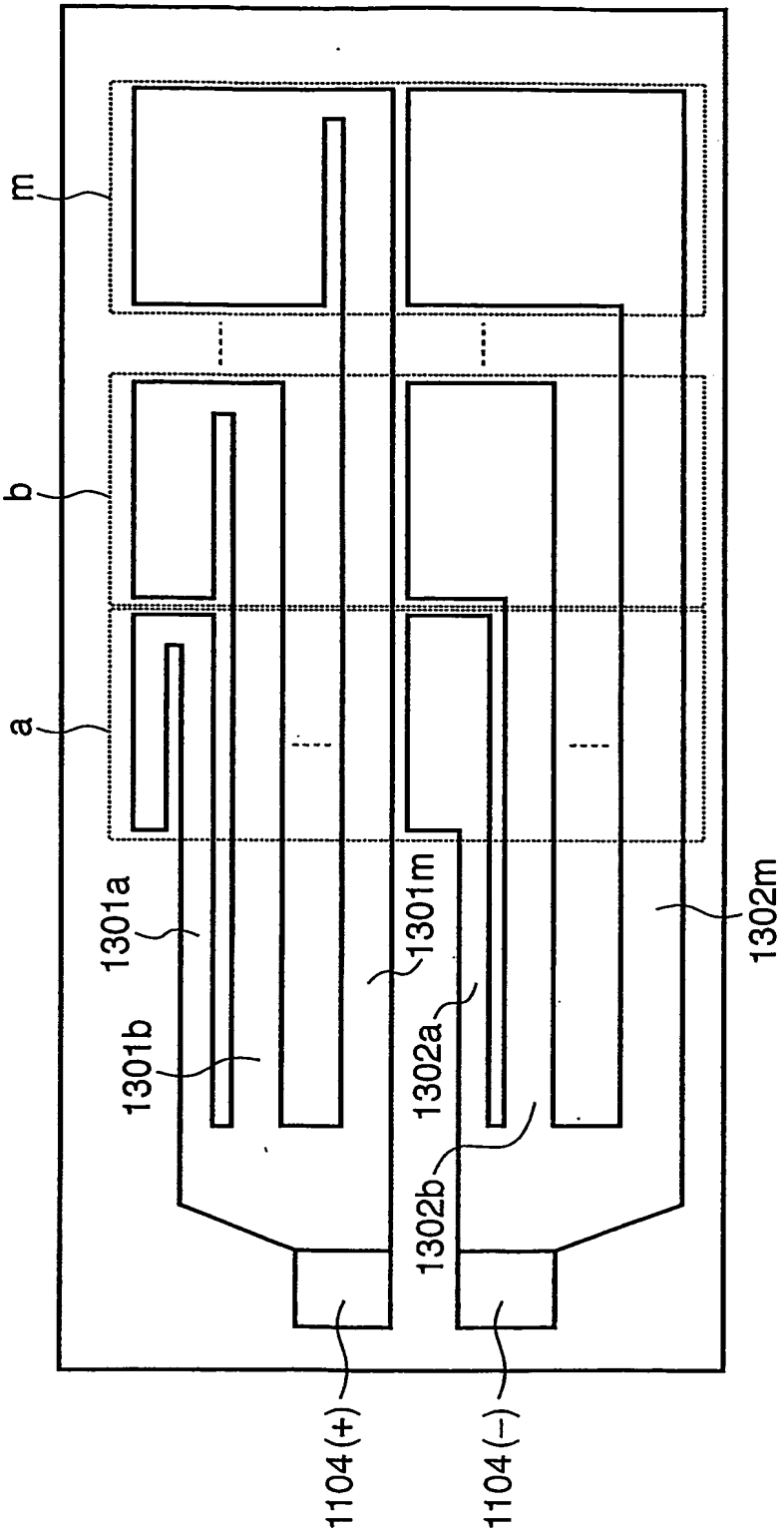
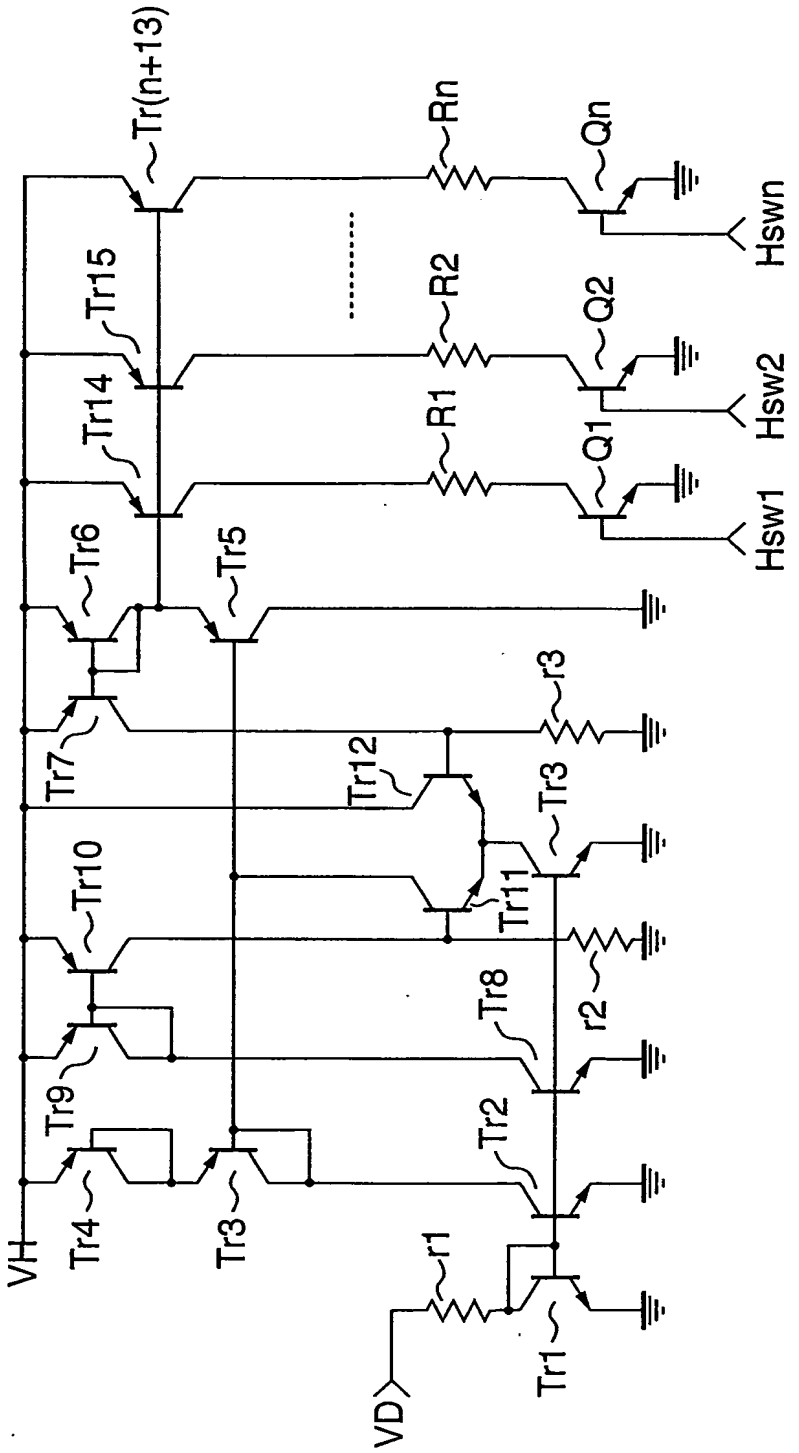


FIG. 9


Tr(n+13)
Rn
Qn
Hswn
Tr15
R2
Q2
Hsw2
Tr14
R1
Q1
Hsw1
Tr6
Tr5
r3
Tr7
Tr12
Tr3
Tr10
Tr11
r2
Tr8
Tr9
Tr2
VH
Tr4
Tr3
r1
VD
Tr1

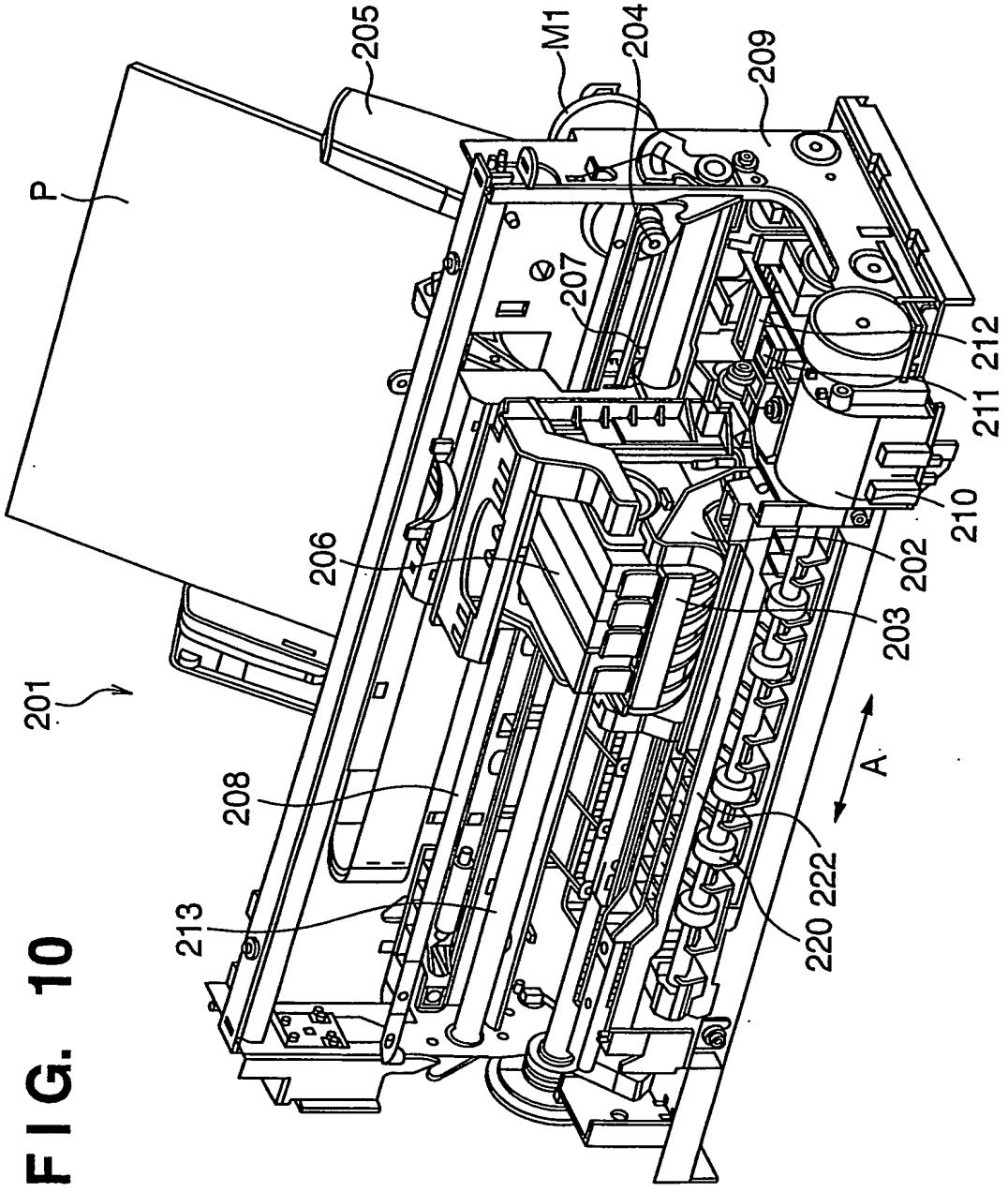
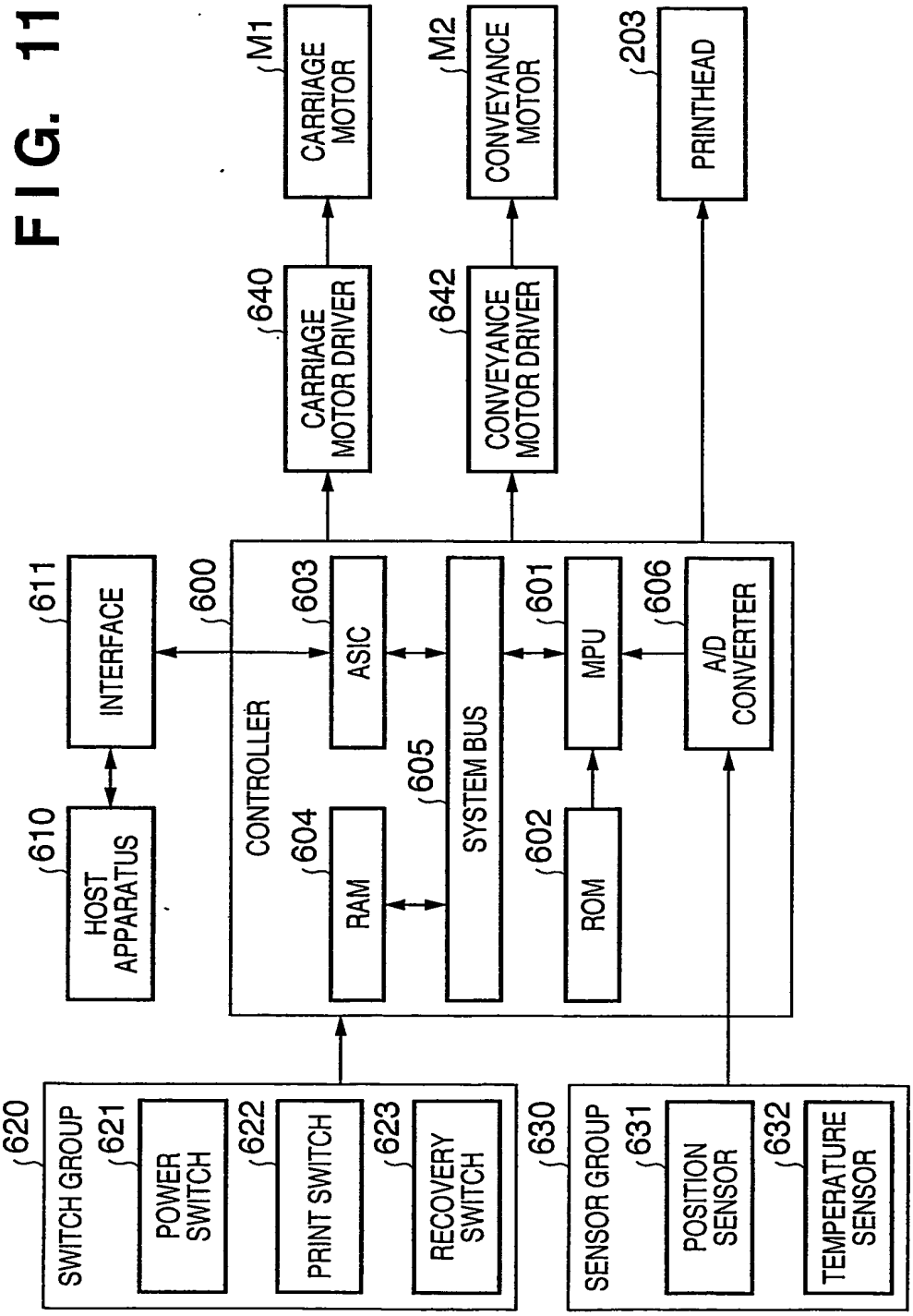


FIG. 10

FIG. 11


M1
CARRIAGE MOTOR
M2
CONVEYANCE MOTOR
203
PRINTHEAD
640
CARRIAGE MOTOR DRIVER
642
CONVEYANCE MOTOR DRIVER
611
INTERFACE
600
CONTROLLER
603
ASIC
605
SYSTEM BUS
601
MPU
606
A/D CONVERTER
610
HOST APPARATUS
604
RAM
602
ROM
620
SWITCH GROUP
621
POWER SWITCH
622
PRINT SWITCH
623
RECOVERY SWITCH
630
SENSOR GROUP
631
POSITION SENSOR
632
TEMPERATURE SENSOR

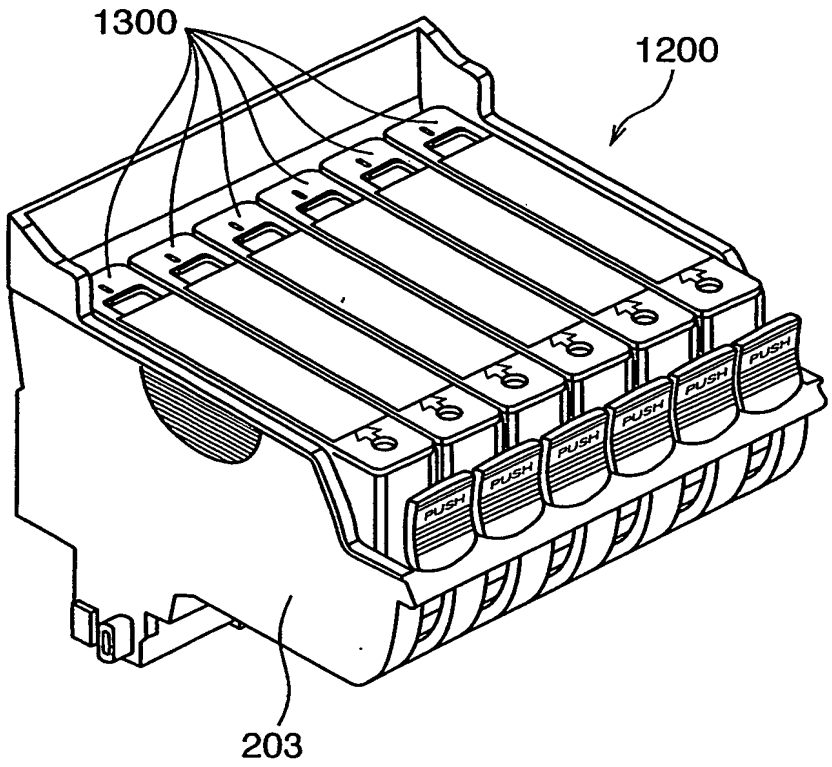



FIG. 12